

METHOD FOR ROUGHENING COPPER SURFACES FOR BONDING TO SUBSTRATES

ABSTRACT

The invention is directed to a method and composition for providing
5 roughened copper surfaces suitable for subsequent multilayer lamination. A
smooth copper surface is contacted with an adhesion promoting
composition under conditions effective to provide a roughened copper
surface, the adhesion promoting composition consisting essentially of an
oxidizer, a pH adjuster, a topography modifier, and a uniformity enhancer.
10 A coating promoter may be used in place of the uniformity enhancer or in
addition to the uniformity enhancer. The adhesion promoting composition
does not require a surfactant. The process may further comprise the step of
contacting the uniform roughened copper surface with a post-dip, wherein
the post-dip comprises an azole or silane compound or a combination of
15 said azole and said silane. The post-dip may further comprise, alone or in
combination, a titanate, zirconate, and an aluminate. The pH adjuster is
preferably sulfuric acid and the oxidizer is preferably hydrogen peroxide. A
hydrogen peroxide stabilizer may be used in the adhesion promoting
composition.